



CARIBBEAN METEOROLOGICAL ORGANIZATION

CARIBBEAN METEOROLOGICAL COUNCIL
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STRATEGIC PLAN 2020-2023

CMO Headquarters Unit
(Submitted by the Coordinating Director)

INTRODUCTION

1. Council will recall that, at its 54th session (Jamaica, November 2014), it requested the CMO Headquarters to develop a regional strategic plan for the meteorological community that would be linked to the Caribbean Community Strategic Implementation Plan. The CMO Headquarters developed and presented to Council its “**Operational Programme 2015-2019 - For the Enhancement of Meteorological and Hydrometeorological Services in CMO Member States**”. This plan was linked to the Caribbean Community Five-Year Strategic Plan for 2015-2019 “Repositioning CARICOM”.

2. The Caribbean Community has developed its Strategic Plan 2020, and thereafter created its Operational Plan for the same period. The CMO Headquarters and the CIMH have been contributing to an agreed Framework and Implementation Plan to accompany the Strategic Plan, which includes an attempt to link internal Strategic Plans and/or Work Programmes with Community Strategic Implementation Plan. The CMO Headquarters and the CIMH have been contributing primarily to the goal of “*Building Environmental Resilience*”. In furtherance of this work, the CMO Headquarters has prepared a Strategic Plan for the period 2020-2023. The plan, which follows the Results-based Management System used by WMO and CARICOM, is produced in the **ANNEX** to this document.

ACTION PROPOSED TO COUNCIL

3. **Council** is asked to:
- (i) **Discuss** the draft of the **Strategic Plan 2020-2023**, shown in the **ANNEX**;
 - (ii) **Approve** the Strategic Plan, after requested revisions



CARIBBEAN METEOROLOGICAL ORGANIZATION

STRATEGIC PLAN 2020-2023

**STRENGTHENING CAPACITY, ADDING VALUE, AND BUILDING RESILIENCE IN THE
METEOROLOGICAL AND HYDROMETEOROLOGICAL SERVICES OF THE CARIBBEAN**

CMO HEADQUARTERS UNIT

STRATEGIC PLAN 2020-2023

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1. Introduction

The availability and integration of weather, water, climate, and socio-economic Information into policy making and societal action are critical to building resilience and realizing sustainable development goals in the Caribbean. The centrepieces for national and regional policy and action are the UN 2030 Agenda for Sustainable Development, the Paris Agreement on climate change, and the Sendai Framework for Disaster Risk Reduction. As governments, organizations and regional bodies align their development activities within these frameworks, the organs of the CMO and the National Meteorological and Hydrometeorological Services (NMHSs) in particular, have enormous roles to play in supporting implementation. Caribbean governments, organizations, and regional bodies will increasingly rely on information from NMHSs as they pursue their sustainable development goals on land, at sea and in the air. The CMO Headquarters advocates for and works to assist in the procurement of the resources which allows the National Services to meet their mission. The concomitant decisions at all levels will continue to be contingent upon a better understanding of the changing threat levels from natural hazards, weather, water and climate extremes and climate change.

Climate services are needed at the national and regional levels for economic sectors, food production, water, health, and energy, among others, and it will be vital in building climate-resilient economies. To address these growing demands for actionable scientific information, the NMHSs of CMO Member States will need to be strengthened through legal mandates, targeted investments, scientific and technical development, and strategic partnerships.

The consequences of high-impact weather, water and climate extremes are devastating for the safety of people, national economies, environments, and food and water security. Extreme hydrometeorological¹ events have accounted for more than 90% of the world's natural disasters. during 1998-2017² (United Nations Office for Disaster Risk Reduction (UNISDR, 2018). For the Caribbean, prominent recent examples are Hurricanes Irma and Maria (2017) and Dorian (2019). With an expected increase in the frequency and intensity of some weather and climate extremes (according to the Intergovernmental Panel on Climate Change, IPCC), threats to the population and the economies will increase. The combination of coastal erosion from intense hurricanes and sea level rise, linked with climate change, create additional vulnerability to Caribbean countries, which have a large percentage of their population and critical economic infrastructure in coastal areas.

2. Addressing the Gaps

Data integration into regional and global information systems

All CMO Member States collectively contribute to the meteorological and hydrological infrastructure and facilities of the region. While this collective system is a public good that benefits all, the contribution and service performance among the Members continues to be uneven. For example, observation data are vital for a variety of applications, from flood and drought forecasts to routine decision-making, but only a limited set of data are actually integrated into regional and global information systems. This may be due to technical limitations and/or failure to prioritize this obligation to the regional and global observation network and information system. Among the most significant requirements is for CMO Member States to participate in the WMO Integrated Global Observation System (WIGOS), which will become operational in 2020.

Observations and forecasts have value when used in decision-making. This entails integrating weather, climate, and water information with other environmental and socio-economic information in a decision-support system and continuous communication with decision-makers. Impact-based forecasting is facilitated by such systems, an example of which is the DEWETRA hosted at the Caribbean Institute for Meteorology and Hydrology (CIMH) on which several forecasters have been trained. NMHSs are facing substantial development needs and capability gaps in providing the weather, climate, water and related

¹ Hydrometeorological hazards are of atmospheric, hydrological or oceanographic origin.

² CRED-UNISDR, Economic losses, poverty and disasters 1998-2017, Geneva 2018

environmental information and services to meet national, regional and global requirements. The regional radar network, in particular, requires specialized knowledge and has costly maintenance issues. These typical challenges for the Member services centre around maintaining sustainable infrastructure, human resources, and the ability to benefit from the advances in science and technology.

Such deficiencies are often present in countries that are particularly vulnerable to natural disasters, which jeopardize effective protection of life and property and they slow down socioeconomic recovery. Narrowing the capacity gaps by sustaining government support, international cooperation, catalyzing investment and targeted assistance is more important than ever in view of the increasing intensity of weather-, climate- and water-related extremes. Observation networks and related information services are critical infrastructure for disaster risk reduction and sustainable development frameworks and their maintenance needs to be prioritized accordingly.

Institutional Strengthening

In order for National Meteorological and Hydrometeorological Services of CMO Member States to continue to be leaders in preserving and expanding knowledge and delivering information to help society make better decisions, their operations need to be underpinned and guided by comprehensive legislation. Further, in discharging their functions, these National Services must necessarily enter into a variety of partnerships and interact with individuals and agencies from many sectors of society. Legislation is necessary to underpin those interactions and provide mechanisms for cost recovery or revenue generation from products developed and services rendered. However, among the CMO Member States, only the Cayman Islands and Guyana have legislation for their National Weather Service and Hydrometeorological Service, respectively. The remainder lack a legal mandate for their National Meteorological or Hydrometeorological Services. In response to this need, the CMO Headquarters, in collaboration with the Organization of Eastern Caribbean States (OECS), with support from the CIMH, developed a proposal for the drafting of model legislation for National Meteorological Services of CMO Member States. This initiative will be a primary focus for the next Strategic period.

Strategic Planning for the NMSs in several CMO Member States is another critical component of institutional strengthening to be supported by the CMO Headquarters Unit. Additionally, the CMO Headquarters had embarked on an initiative to assist in upgrading meteorological services in the Turks and Caicos Islands to include forecasting capabilities. That activity was described in its Operational Plan for 2015-2019 and continues as a priority of this Strategic Plan.

Recommendations from Review of 2017 Early Warning Systems

The desire for having at least one senior forecaster in all CMO offices was recently noted in the WMO Climate Risk and Early Warning Systems (CREWS-Caribbean) review of Early Warning Systems (EWS) in the Caribbean in the wake of the catastrophic 2017 Hurricane Season. That EWS review found several issues, including the importance of having redundancy in communication systems. The EWS review also found inadequate monitoring of hazards, such as coastal flooding and flash-flooding and highlighted the need for Quality Management Systems (QMS) for hydrometeorology; not only for warnings but for downstream development. The CMO Headquarters Unit and the CIMH have experience in helping the National Meteorological Services develop QMS for aviation services—experience which can be applied for all areas of hydrometeorology.

Severe Weather Impact-based Forecasting, Warnings, and Collaborations

While the Caribbean has a well-established regional hurricane forecast warning system, no program exists to facilitate regional collaboration and information exchange for non-tropical cyclone severe weather events, which are also deadly and destructive and can occur any time of year. Motivated by that need, the WMO, in partnership with the CMO, Météo-France, and NOAA (with initial funding from Canada) initiated a *Severe Weather Forecast Programme* (SWFP) for the Eastern Caribbean with special arrangements for Haiti. The SWFP will utilize forecast models from global centres and regional models of the CIMH and disseminate information to disaster management offices and other stakeholders. The SWFP will be advancing impact-

based forecasting in the region, a goal that is in common with the Weather and Climate Ready Nations Program being implemented by the CIMH.

Cataloguing Hazardous Events

The assessment of climate risk entails having knowledge of climate extremes, their current and potential variability under different future climate scenarios. By cataloguing and archiving extreme weather and climate events with the WMO Regional Climate Centre (RCC) at CIMH, Member States can then link the events to any associated loss and damage and contribute to Article 8 of the Paris Agreement on “averting, minimizing and addressing loss and damage”. Those activities are synergistic with the CIMH's activities and commiserate with resolutions of the 18th World Meteorological Congress on Cataloguing Hazardous Events and the Global Multi-hazard Alert System (GMAS). The CMO Headquarters unit will be facilitating and encouraging Member States to contribute to archiving hazardous events with the RCC at CIMH.

3. Overarching Priorities

This Strategic Plan is focussed on addressing the most pressing developments and needs during 2020-2023, as part of fulfilling the long-term UN Sustainable Development Goals out to 2030. The Plan, which articulates expected outcomes and clear benefits to Members, will be focussed on the following priorities:

- a) Enhancing disaster preparedness and reducing loss of life and property from extreme hydrometeorological events and severe weather.
- b) Supporting climate-smart decision making to build resilience and adaptation to climate risk.
- c) Supporting the strengthening and maintenance of observation networks and information services
- d) Enhancing the socioeconomic and national security value of weather, climate, hydrological, and related environmental services.

These priorities match the WMO strategic priorities and long-term goals, specifically:

- *Long Term Goal 1: Better serve societal needs: delivering, authoritative, accessible, user-oriented and fit-for-purpose information and services*
- *Long Term Goal 4: Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens*

The CMO Headquarters has also aligned its strategic objectives with the strategic priorities of development partners. Additionally, these goals are supportive of CIMH initiatives, such as impact-based forecasting and reliable observation networks.

4. Structural alignment at CMO Headquarters

In order to effectively support the strategic priorities and achieve the desired outcomes, the CMO Headquarters will be adding a Project Development Officer to its staff and enhancing the professional development of its current staff. The Project Officer's position was approved by Council several years ago but hiring has been delayed because of inadequate financial resources to support the position.

Among the duties of the Project Development Officer is to assist in planning, implementing, and evaluating projects for the benefit of CMO Members; and, where appropriate, and feasible, at the request of the CIMH. The Officer will also help to promote regional activities in weather, water, climate, and related fields; enhancing the visibility of the Organs and Member States of the CMO; provide technical backstopping to the NMHSs of CMO Member States; assist with CMO activities in projects implemented by other organizations; and develop various publicity and visibility material.

The CMO Headquarters also recognizes the advantages of having Caribbean voices within the WMO and partner agencies, and has been recruiting, and plans to continue recruiting, regional talent for leadership positions within the WMO.

5. Strategic Priorities, Goals, and Outcomes for NMHSs

a) Enhance disaster preparedness and reducing losses of life and property from extreme hydrometeorological events and severe weather

***Ultimate Outcome 1** Support for delivery of authoritative, accessible, user-oriented, and fit-for-purpose information and services to reduce the disaster risk of hydrometeorological extremes.*

- **Intermediate Outcome 1** Enhanced capability of Members to develop, deliver, and utilize accurate and reliable weather, climate, water and related environmental impact-based forecasting services to mitigate against extreme hydrometeorological events.

Focus in 2020-2023:

- Support implementation of impact-based forecast and warning products and services
 - Strengthen national capacity in multi-hazard early warnings through enabling legislation that clarifies the roles and responsibility of NMHSs
 - Transition the SWFP in the Eastern Caribbean from demonstration phase to operations.
 - Support Members' delivery of authoritative national climate information products and services, through enabling legislation authorizing those functions.
 - Support the upgrading of meteorological services in the Turks and Caicos Islands
 - Support the enhancement and increase in weather services via uptake of modern technology in service delivery and quality management principles.
 - Providing guidance on the adoption of international standards, quality control mechanisms and recommended practices.
 - Provide guidance to NMHSs for the implementation of redundant communications systems that should be used in WMO RA IV (North and Central America and the Caribbean)
 - Assist in the mobilization of resources involving development agencies and national governments for disaster risk reduction
- **Immediate Outcome 1.1** Strengthened national multi-hazard early warning/alert systems to better enable effective responses to the associated risks.
 - **Immediate Outcome 1.2** Supported the implementation of the WMO Severe Weather Forecast Programme (SWFP) for the Eastern Caribbean - a prototype for regional coordination and collaboration on early warnings for non-tropical cyclone severe weather.
 - **Immediate Outcome 1.3** Broadened provision of policy- and decision-support for drought and flood monitoring and prediction services.
 - **Immediate Outcome 1.4** Enhanced value and innovations in the provision of impact-based decision-support to mitigate weather, climate, and water-related hazards.
 - **Immediate Outcome 1.5** Support for the implementation of redundant communication systems to sustain warning systems in the event of multiple hazards

and/or serial extreme events.

b) Support climate-smart decision making to build resilience and adaptation to climate risk.

NHMSs will be supported in the development of national climate services, following the successful example of the CIMH-led Caribbean Outlook Forum (CariCOF) and Consortium for Early Warning Information System Across Climate Time Scales (EWISACTS) at the regional level. The CMO Headquarters has been contributing to the EWISACTS Roadmap for 2020-2030 and will help NMHS to plan strategically for building resilience and adaptation to climate risk at the national level.

Ultimate Outcome 2 *Climate services and information integrated into policy and decision-making framework for building socioeconomic resilience and reducing climate risk.*

- **Intermediate Outcome 2** Enhanced capability of Members to develop, access and utilize accurate, reliable climate, water and related environmental services to best support the policy-making and actions that mitigate against climate risks and build socioeconomic resilience.

Focus in 2020-2023

- Support Members' in delivery of authoritative national climate information products and services in the priority areas of EWISACTs to adapt and respond to climate variability and change through draft legislation that authorizes their provision of climate services.
- Encourage participation of NMHSs in a climate service information system enabling all Members to access, and add value to, the best available regional climate information products and methodologies.
- **Immediate Outcome 2.1** Strengthened capability to provide climate services through investments and/or via public-private partners.
- **Immediate Outcome 2.2** Broadened provision of policy- and decision-supporting climate information and services.
- **Immediate Outcome 2.3** Supported the expansion of NMHS contributions to the Regional Climate Centre database for climate extremes, as called for by WMO Resolution 9 (Cg-17).

c) Support the strengthening and maintenance of observation networks and information services

Ultimate Outcome 3 *Enhanced observations and integrated information services for impact-based forecasting and decision-support for both routine activities and high-impact events*

- **Intermediate Outcome 3** An integrated observational network optimized to ensure effective national coverage and accessibility for risk monitoring and numerical weather prediction. High quality fit-for-purpose measurements feeding a continuous data exchange underpinned by best practices in data management and data processing mechanisms.

Focus in 2020-2023

- To encourage and support international exchange of data, along with strengthened monitoring of compliance within WMO RA IV

- Provide advice on the development of data management systems and practices through WMO Information System (WIS) to help ensure that all observational data and key products are properly archived.
 - Help facilitate international exchange of data, along with strengthened monitoring of compliance.
 - Assist in the development of data management systems and practices through WMO Information System (WIS) to help ensure that all observational data and key products are properly archived
 - Creating and operationalizing of the CMO Operational Radar Working Group
 - Supporting the use of information technology for impact-based forecast and warnings.
 - Supporting the use of guidance material to facilitate integration of externally-sourced observations into the impact-based forecast process.
 - Provide leadership in promoting the principles on which global meteorology is built, emphasizing authoritative voice, common standards, data and product sharing among NMHSs of Member States.
- **Immediate Outcome 3.1** Optimized acquisition of observational data through the WMO Integrated Global Observing System (WIGOS).
 - **Immediate Outcome 3.2** Improved and increased access to, exchange, and management of current and past observational data and derived products through the WMO Information System (WIS).
 - **Immediate Outcome 3.3** Initiation of an operational radar working group to facilitate sharing of expertise and ensuring the maintenance and functioning of the Caribbean Radar Network.
 - **Immediate Outcome 3.4** Members are using information services that facilitate integration of observations, numerical models, and tools to support impact-based forecasting and collaboration with disaster management and other core partners.
- d) Enhance the socioeconomic and national security value of weather, climate, hydrological, and related environmental services.

Ultimate Outcome 4 *Enhanced service delivery capacity of Members to ensure availability of essential information and services needed by governments, economic sectors, and citizens*

Focus in 2020-2023

- Facilitate development of draft legislation to aid Member States with respect to technical, institutional, and human resources, enabling them to provide needed weather, climate, and hydrological services
- Facilitate the development of national strategic plans and operational plans for NMHSs to boost their service capabilities and, hence, their socio-economic value
- Liaise between Member States and WMO to support the assessment of the economic benefits of NMHSs.
- Support Members to understand and acquire the qualification and competencies required for effective service delivery, focused on WMO standards and recommendations.
- Coordinating with WMO on new integrated weather service delivery, such as their marine service delivery training initiative, to which the CMO Headquarters contributed in 2019.

- Facilitate the establishment of principles and guidance for successful partnerships with public sector, private sector, or academia to improve and expand services and develop markets for services. Expand on dialogue started during the Caribbean Symposium 2019: Operational Hydro-meteorology Leadership Summit.
- Support improvement in the communication skills of NMHSs and uptake of modern technology in service delivery.
- Help NMHSs to become more visible by amplifying their news

- **Intermediate Outcome 4** Improved access to regional and global monitoring and prediction systems and utilization of weather, climate and water information and services that brings tangible benefits to Members.

- **Immediate Outcome 4.1** Assessed the needs of Members to provide and utilize essential weather, climate, hydrological and related environmental services.

- **Immediate Outcome 4.2** Assisted in the development and sustaining of core competencies and expertise.

- **Immediate Outcome 4.3** Scaled-up effective partnerships for investment in sustainable and cost-efficient infrastructure and service delivery.

6. Monitoring indicators for Service to NMHSs

Immediate Outcome	Monitoring indicators
<p>1.1 Strengthened national multi-hazard early warning/alert systems to better enable effective response to the associated risks.</p>	<p>1.1.1 Number of Members participating in a Common Alerting Protocol (CAP) for warnings and alerts</p> <p>1.1.2 Number of Members with a MHEWS integrated in a national Disaster Risk Reduction management system</p>
<p>1.2 Supported the implementation of the WMO Severe Weather Programme (SWFP) in the Eastern Caribbean, a prototype for a regional early warning system for non-tropical cyclone severe weather.</p>	<p>1.2.1 Number of forecasters trained in the SWFP concept</p> <p>1.2.2 Number of Members participating in the SWFP</p> <p>1.2.3 At least one verification measure implemented for severe weather forecasts</p> <p>1.2.4 Users feedback on the usefulness of severe weather forecasts</p>
<p>1.3 Broadened provision of policy- and decision-supporting drought and flood monitoring and prediction services.</p>	<p>1.3.1 Number of Members providing national flood and drought monitoring and prediction services</p> <p>1.3.2 Number of Members making use of RCCs and/or RCOFs</p> <p>1.3.3 User/stakeholder assessment of the relevance, usefulness and timeliness of outlooks/alerts for extreme climate events</p>
<p>1.4 Enhanced value and innovations in the provision of impact-based decision-support to mitigate weather, climate, and water-related hazards.</p>	<p>1.4.1 Number of Members using (a) web applications and (b) social media in warning delivery</p> <p>1.4.2 Number of Members with QMS for hydrometeorology and EWS.</p> <p>1.4.3 Number of Members using online platforms for integrating weather, water, and climate hazards with socio-economic data</p> <p>1.4.4 Number of Members with agreements between NMHSs and private sector/academia actors on (a) EWS service delivery and (b) maintenance of networks for EWSs</p>
<p>1.5 Support for the implementation of redundant communication systems to sustain warning systems in the event of multiple hazards and/or serial extreme events.</p>	<p>1.5.1 Number of Members with backup communication and power systems</p> <p>1.5.2 A revised regional EWS with backup assignments for forecast and warnings</p>

Immediate Outcome	Monitoring indicators
2.1 Strengthened capability to provide climate services through investments and by public-private partners.	<p>2.1.1 Number of Members with basic system for delivering climate services</p> <p>2.1.1 Number of Members with QMS for selected services (aviation, marine, hydrometeorology, EWS)</p>
2.2 Broadened provision of policy- and decision-supporting climate information and services.	<p>2.2.1 Number of Members making use of RCCs and/or RCOFs</p> <p>2.2.2 Number of Members organizing NCOFs</p> <p>2.2.3 Number of users accessing climate services through web platforms or other methods of service delivery (e.g., mail-in requests)</p> <p>2.2.4 User/stakeholder assessment of the relevance, usefulness and timeliness of climate information</p>
2.3 Supported the expansion of contributions to the Regional Climate Centre database for climate extremes, as called for by WMO Resolution 9 (Cg-17).	2.3.1 Number of Members contributing to the weather and climate impacts databases of the WMO RCC at CIMH
3.1 Optimized acquisition of observational data through the WMO Integrated Global Observing System (WIGOS).	<p>3.1.1 Percentage of the regional Earth system covered by observations (especially hydrosphere)</p> <p>3.1.2 Number of Members complying with WMO observation standards</p> <p>3.1.3 Number of Members implementing national observing system WIGOS</p>
3.2 Improved and increased access to, exchange and management of current and past observational data and derived products through the WMO Information System (WIS).	<p>3.2.1 Number of Members with national network monitoring and data management systems established</p> <p>3.2.2 Number of Members implementing data exchange policies, as per WMO Resolutions 40, 25 and 60.</p>
3.3 Initiation of an operational radar working group to facilitate sharing of expertise and ensuring the maintenance and functioning of the Caribbean Radar Network.	<p>3.3.1 Approved Terms of Reference for the radar operations working group</p> <p>3.3.2 Initial meeting/workshop held</p> <p>3.3.3 Online platform initiated for collaboration, troubleshooting, and information exchange</p>
3.4 Members are using information services that	3.4.1 Number of Members using online platforms, such as DEWETRA, for integrating observations, model

Immediate Outcome	Monitoring indicators
facilitate integration of observations, numerical models, and tools to support impact-based forecasting and collaboration with disaster management and other core partners.	forecasts, with hydrological and socio-economic data for decision support and collaboration. 3.4.2 Number of Members with agreements between NMHSs and private sector/academia actors on(a) service delivery and (b) maintenance of networks
4.1 Assessed the needs of Members to provide and utilize essential weather, climate, hydrological and related environmental services.	4.1.1 Number of NMHSs with strategic plans 4.1.2, Number of NMHSs with legal basis for their operation 4.1.3 Number of NMHSs with enhanced human and technical capacity to provide a range of services.
4.2 Assisted in the development and sustaining of core competencies and expertise.	4.2.1 Number of NMHS staff trained at WMO training centres and/or fellowships 4.2.2 Number of NMHSs whose staff have adequate (to be defined) level of core competencies to meet national and international mandate
4.3 Scaled up effective partnerships for investment in sustainable and cost-efficient infrastructure and service delivery.	4.3.1 Number of NMHSs receiving international capacity development assistance 4.3.2 Number of Members benefiting from catalyzed development projects 4.3.3 Number of Members with legal basis for public-private partnerships 4.3.4 Number of Members with socioeconomic benefit analysis conducted in the past X years

7. Strategic Priorities for the CMO Headquarters Unit

The CMO Headquarters Unit has a strong leadership role to play in the region and, as such, needs to develop its own capacity and resources in order to successfully serve its Member States. Over the next four years the Headquarters Unit aims to:

- a) Enhance the workforce capacity of the CMO Headquarters Unit
 - Add a Project Development Officer to help fulfil the Strategic objectives outlined above
 - Advance the Professional Development of Staff members
 - Initiate a suitable Performance Management System for the Headquarters Unit Staff
 - Increase the number of interns hosted by the Headquarters Unit
- b) Increase the visibility of operational hydro-meteorology in the Caribbean
 - Build the visibility of the Organization regionally and globally, through such activities as:
 - Re-designing the CMO website to serve as a hub for news about hydro-meteorology in the Caribbean
 - Sharing a Communications Specialist with CIMH
- c) Enhance the financial resources of the CMO Headquarters Unit
 - Increase the percentage of subventions collected from Member States
 - Increase communicating of the Organization's service to Member States
 - Seek opportunities to share expertise to aid governments of Member States and increase exposure of the Organization
 - Develop more projects with regional and international partners
 - Support recruitment of Caribbean personnel into positions within WMO and other critical international agencies

8. Outcomes

Outcomes

- a) Enhance the workforce capacity of the CMO Headquarters Unit

Ultimate Outcome 1 *Enhanced capacity and resources to successfully serve Member States*

- **Intermediate Outcome 1.1** Enhanced capability to discover new potential resources and to develop successful proposals, and implement multiple projects
- **Intermediate Outcome 1.2** Improvement in workforce competence and capacity

- b) Increase the visibility of operational hydro-meteorology in the Caribbean

Ultimate Outcome 2 *Branding of the Organs of the CMO and NMHS as hubs for weather, water, and climate, and related activities in the Caribbean*

- **Intermediate Outcome 2.1** Greater ability to reach and interact with existing users and potential users of weather, water, and climate information

- c) Enhance the financial resources of the CMO Headquarters Unit

Ultimate Outcome 3 *Adequate resources to achieve the strategic goals of the Organization*

- **Intermediate Outcome 3.1** Stakeholders receive more frequent updates on CMO

activities

- **Intermediate Outcome 3.2** Recognition of the value of CMO expertise to the development goals of regional governments
- **Intermediate Outcome 3.3** More projects implemented with regional and international partners
- **Intermediate Outcome 3.4** Caribbean personnel in positions within WMO and related international agencies and development partners

9. Monitoring indicators for CMO Headquarters

Immediate Outcome	Monitoring indicators
1.1 Enhanced capability to discover new potential resources and to develop successful proposals, and implement multiple projects	1.1.1 Number of proposals submitted 1.1.2 Number of proposals approved 1.1.3 Number of projects implemented
1.2 Improvement in workforce competence and capacity	1.2.1 Number of staff members trained in a new area of expertise 1.2.2 Number of interns hosted 1.2.3 Number of internship projects completed
2.1 Greater ability to reach and interact with existing users and potential users of weather, water, and climate information	2.1.1 Number of users accessing CMO websites 2.1.2 Number of persons attending CMO events
3.1 Stakeholders receive more frequent updates on CMO activities	3.1.1 Number of interim reports provided to CMO stakeholders
3.2 Recognition of the value of CMO expertise to the development goals of regional governments	3.2.1 Number of requests for assistance fulfilled
3.3 More projects implemented with regional and international partners	3.3.1 Number of projects implemented with partners
3.4 Caribbean personnel in positions within WMO and related international agencies and development partners	3.4.1 Number of Caribbean persons in position within WMO 3.4.2 Number of Caribbean persons serving on WMO Commissions, Panels, Expert Teams, or other Bodies

Immediate Outcome	Monitoring indicators
	3.4.3 Number of Caribbean persons leading activities in WMO or related international agencies

10. Risks

The hiring and retention of a Project Development Officer is at risk from inadequate financial resources. A reduction in financial support can also adversely affect the ability of the Headquarters to expand services to CMO Member States.

Projects developed with external partners may be affected by the ability of the partners to implement their component of a given project. The CMO Headquarters can help to mitigate the risk to the whole project by compartmentalizing components, where feasible, so that failure in one component does not mean failure of the whole. Additionally, project agreements, should, where feasible, accommodate adjustments in deliverables and/or timelines with appropriate justification.

Additionally, while the Headquarters Unit facilitates and coordinates activities among Member States; the ability of the Member States to fulfil their obligations are determined by factors out of the control of the CMO Headquarters and may be due to challenges at the national level.

11. Estimated expenditure by Appropriation Part

Appropriation Parts	Budget/Source for 2020-2023
Service to NMHSs	
<p>1. Goal 1</p> <p>WMO SWFP - Eastern Caribbean, Testing and Demonstration Phase</p> <p>Operational Phase</p> <p> Regional Forecast Support Facility (RFSF - Martinique)</p> <p> Virtual Collaboration - CMO Headquarters Web Conferencing license</p> <p>Facilitate Template Legislation for NMHS - WMO LoA with CMO</p> <p>Support uptake of modern technology in service delivery and QMS</p> <p>Support redundant communications systems</p>	<p>Seed funding has been provided by Canada through WMO and via WMO CREWS Secretariat. Further funding for the Demonstration will be sourced from other WMO project funds</p> <p>Supported by Meteo France</p> <p>Funded by CMO regular budget. Approx. USD500.00 for the 4 years</p> <p>WMO Funded</p> <p>Project funds to be sourced</p> <p>Project funds to be sourced</p>
<p>2. Goal 2</p> <p>Facilitate Template Legislation for NMHS - WMO LoA with CMO</p> <p>Facilitate the development of national strategic plans for NMHSs</p>	<p>WMO Funded</p> <p>WMO Funded</p>
<p>3. Goal 3</p> <p>WIGOS/WIS</p> <p>RWCs in RA IV implementation planning</p> <p>Operational radar working group - Initial meeting</p> <p> Virtual Collaboration - CMO Headquarters Web Conferencing license</p>	<p>Funded from CMO regular budget, services provided by the STO.</p> <p>WMO Regional Association IV funds</p> <p>Funded by CMO regular budget for 2020. (USD 10K)</p> <p>Funded by CMO regular budget. Approx. USD500.00 for the 4 years</p>
<p>4. Goal 4</p> <p>Enhancement in the communication skills of NMHSs</p> <p>Help NMHSs to become more visible - CIMH and CMO HQ</p> <p>Facilitate Public/Private/Academic partnerships</p>	<p>Project funds to be sourced</p> <p>Project funds to be sourced</p> <p>Project funds to be sourced, CMO Regular Budget for website</p>

<p>Assist in the mobilization of resources</p> <p>Facilitate development of draft legislation</p> <p>Facilitate the development of national strategic plans for NMHSs</p> <p>Coordinating with the WMO on new integrated weather service delivery</p>	<p>CMO regular budget through the services of the Project Officer</p> <p>WMO Funded</p> <p>WMO Funded</p> <p>CMO regular budget.</p>
<p>CMO Headquarters</p>	
<p>5. HQ Goal 1</p> <p>Add a Project Development Officer</p> <p>Professional Development of Staff (online courses, e.g., via Lynda, UK Met)</p> <p>Initiate Performance Management System for HQ Staff</p> <p>Increase the number of interns hosted by the Headquarters Unit - CCRIF</p>	<p>USD 132K (For the three years 2021 - 2023. Relocation would be a further USD 35K)</p> <p>USD 240 -360 annually</p> <p>To be determined (CD to investigate systems used by CARICOM institutions and elsewhere)</p> <p>CCRIF funded</p>
<p>6. HQ Goal 2</p> <p>Re-designing the CMO website (as hub for hydro-meteorology news)</p> <p>Share a Communications Specialist with CIMH</p>	<p>USD 2000 to 8000 (depending on design and content management system)</p> <p>To be determined with CIMH. USD 45K for 2021-2023</p>
<p>7. HQ Goal 3</p> <p>Increase communicating of service to Member States</p> <p>Develop more projects with partners</p> <p>Support recruitment into WMO</p>	<p>CMO regular budget</p> <p>CMO budget, through services of CD, STO, and Project Officer</p> <p>CMO regular budget</p>